

**U.S. HOUSE OF REPRESENTATIVES
COMMITTEE ON SCIENCE AND TECHNOLOGY
SUBCOMMITTEE ON SPACE AND AERONAUTICS**

HEARING CHARTER

***NASA's Astronaut Health Care System—
Results of an Independent Review***

Thursday, September 6, 2007
10:00 a.m. – 12:00 p.m.
2318 Rayburn House Office Building

Purpose

On Thursday, September 6, 2007 at 10:00 a.m., the House Committee on Science and Technology's Subcommittee on Space and Aeronautics will hold a hearing to examine the results of two reports on the National Aeronautics and Space Administration's (NASA) astronaut medical and behavioral health care system. The first, the report of the *NASA Astronaut Health Care System Review Committee*, provided an independent assessment of NASA's medical and behavioral health care system. The second, a Johnson Space Center internal review considered opportunities for lessons learned in light of the incident involving NASA astronaut Lisa Nowak. The hearing will explore the findings and recommendations of these reports and any actions NASA plans to take in response to them.

Witnesses

Witnesses scheduled to testify at the hearing include the following:

Panel 1

Col. Richard E. Bachmann, Jr.

Chair, NASA Astronaut Health Care System Review Committee
Commander and Dean of the U.S. Air Force School of Aerospace Medicine

Dr. Richard S. Williams
Chief Health and Medical Officer, NASA

Dr. Ellen Ochoa
Director, Flight Crew Operations
NASA Johnson Space Center

Mr. Bryan O'Connor
Chief, Safety and Mission Assurance, NASA

Panel 2

Dr. Michael Griffin
Administrator, NASA

Potential Issues

The following are some of the potential issues that might be raised at the hearing:

- *The external review of the astronaut health care system identified a number of significant concerns—what was the basis of the committee’s findings and recommendations?*
- *The external review of the astronaut health care system identified a number of “problematic” cultural and structural issues. Is there any evidence that the NASA culture, particularly as it relates to the astronaut program, unwittingly encourages the downplaying of human factors problems (substandard task performance, risky behaviors, other behavioral issues) that if unaddressed may pose risks to flight safety or have mission impacts?*
- *How pervasive are the problematic conditions highlighted by the external review committee, and how should NASA go about getting an answer to that question?*

- *Are NASA’s decision appeal processes, anonymous reporting systems, and other safety and mission assurance efforts adequately capturing human factors risks, and if not, what should be done?*
- *To what extent, if at all, should NASA get involved in the off-duty lives of its astronauts in the interest of ensuring that astronauts get the proper support and services for dealing with behavioral issues or problems, especially those that may not violate a medical or behavioral health standard but which could potentially pose a flight safety risk or have a mission impact if left unaddressed?*
- *How can NASA ensure that an open and objective environment exists within the agency for addressing medical or behavioral concerns?*
- *What explains the disconnect between the information provided by interviewees to the external review committee and the information provided to Mr. O’Connor during his investigation?*
- *Is NASA’s timeline for resolving questions and implementing recommended improvements to NASA policies, procedures, and practices appropriate, and what will Congress need to do, if anything, to ensure that the recommendations are actually implemented?*

Background Information

In the wake of the arrest of astronaut Lisa Nowak, the NASA Administrator ordered an independent external review of NASA’s astronaut health care system, focused on space medicine operations at the Johnson Space Center (JSC). It did not focus on the specifics of the Lisa Nowak incident. In addition, an internal review was undertaken by JSC management to determine “*whether there were any indicators which could have prompted NASA to take actions that could have averted the sequence of events.*” As part of the JSC review, “*astronaut selection and retention procedures were reviewed to see if there were any lessons learned that could be incorporated into the improved practice of behavioral medicine.*”

A. Report of the NASA Astronaut Health Care System Review Committee

In carrying out the NASA Administrator's directive, Dr. Richard Williams, the NASA Chief Health and Medical Officer (CHMO), prepared the task statement for the external review committee; selected the Chairman of the committee; selected the members of the committee, based on nominations from various federal agencies of *"appropriately credentialed physicians and mental health professionals, employed by the federal government or on active duty in the military services, and experienced in medical and behavioral health support to organizations and personnel engaged in critical or hazardous operations"*; and appointed two NASA employees as ex-officio members of the committee, one astronaut as a consultant, and one NASA employee as executive secretary. The chairman of the committee was Col. Richard Bachmann, Commander of the USAF School of Aerospace Medicine and specialist in aerospace medicine. A list of the committee members is included as Attachment 1 to this hearing charter.

Purpose of the Assessment

As stated in the report of the external review committee, the purpose of the assessment was as follows:

"To provide rapid objective assessment, problem identification, and recommendations for action or further study of the following specific areas to the Chief Health and Medical Officer and NASA Administrator:

- 1. Medical evaluation for acceptance to the Astronaut Corps, to include psychological testing*
- 2. Annual medical examination and certification of astronauts for flight duty*
- 3. Periodic medical and psychological evaluation and testing of astronauts*
- 4. Astronaut certification for space flight, from a medical and behavioral health perspective*
- 5. Professional qualifications of health care providers*

6. *Quality/adequacy of medical practice relative to expected standards of care and*
7. *Administrative considerations of health services, including:*
 - a. *Provider credentials and privileging*
 - b. *Recordkeeping*
 - c. *Communication and reporting*
 - d. *Disposition of aeromedical concerns; and*
 - e. *Privacy considerations*
8. *Behavioral health considerations within the context of the NASA Personnel Reliability Program (PRP)*

These criteria were provided to the committee to help focus the review, but did not constrain or limit the review. During the first committee meeting, the CHMO asked the committee to provide opinions on the following additional questions:

9. *To what extent are disorders of conduct indicative of underlying mental health pathology?*
10. *To what extent can regular psychological testing or psychiatric evaluation predict a disorder of conduct or ‘act of passion’?*
11. *What systemic procedures could be put in place to predict disordered conduct?”*

Approach and Schedule

The review committee was selected and appointed in late February 2007. The committee held three sets of meetings: in Washington, DC on March 28th, at JSC on April 23-26th, and in San Antonio on May 30-31st. During the JSC meeting, the committee members received briefings from and had meetings with NASA personnel. Following that, the committee members split up and held private interviews with astronauts, flight surgeons, and astronaut family members. Members interviewed 8 of 21 space medicine flight surgeons [who support flight crews], all of the clinic-assigned flight surgeons [who provide clinic services for astronauts and family members] and all of the behavioral health staff. The groups also reviewed the facilities, offices, and relevant documents for those functional areas. The NASA astronaut office informed the astronaut corps of the opportunity to speak with the committee on a voluntary basis. Fourteen currently active

astronauts (all but one had flown in space) chose to speak to the members. Five astronaut family members also volunteered to speak to committee members. After the JSC visit, the committee had follow-up conversations/e-mail exchanges with a number of the interviewees. The interviews were intended to be anonymous and confidential, and Col. Bachmann cites that as the reason the committee's report does not "name names" or provide information that could identify specific individuals. There were no prepared sets of questions. Instead, the members conducted open-ended interviews to allow interviewees to offer whatever information they chose to share with the committee members.

The committee held its third and final meeting on May 30-31, 2007 at the USAF School of Aerospace Medicine to consider draft findings that had been developed by the members and to write the report. As stated in the report: *"The findings and recommendations expressed in this report represent the unanimous opinion of the committee."* The option of doing minority reports was made available to the committee members but none saw the need to do so. The committee submitted its draft report on June 21, 2007 to the NASA Chief Health and Medical Officer *"to allow NASA functional areas an opportunity to provide comments and correct factual errors or misstatements."* Col. Bachmann and the members of the committee briefed the senior NASA management (including the NASA Administrator via teleconference) on July 16, 2007. NASA Headquarters released the report to the public and held a press conference on July 27, 2007.

Major Findings of the External Review

The external review committee's report identified a number of significant issues related to NASA culture, communication, and behavioral concerns. In conversations with staff, Col. Bachmann emphasized that the issues and concerns cited in the report, which are reflected in the report's findings, were raised by the interviewees in the course of the confidential interviews. For example, the committee members did not ask the interviewees about alcohol use by astronauts—the incidents cited in the report were volunteered by interviewees during the course of the interviews as specific examples of safety concerns. According to Col. Bachmann, various concerns referenced in the report were based on information provided by interviewees who were eyewitnesses, and did not represent second- or third-hand hearsay. Moreover, the types of concerns raised by interviewees were consistent

across a large proportion of the interviewees. As noted in the committee's report: *"Although they do not represent a random or exhaustive sample of the larger population of astronauts and family members, the issues raised were remarkably consistent and compelling and deserve focused attention."*

The following represent some of the most notable findings in the external review report [a complete set of findings and recommendations can be found in the external review committee's report, which has been provided to subcommittee members]:

- *"Many anecdotes were related that involved risky behaviors by astronauts that were well known to the other astronauts and no apparent action was taken. Peers and staff fear ostracism if they identify their own or others' problems."*
- *"As the review progressed, it became apparent that major vulnerabilities, underlying root causes, and contributing factors extend well beyond the specific medical aspects of NASA operations...These issues are so ingrained and longstanding that it will take senior leadership action to remediate them."*
- *"Problems of communication were evident among the four areas addressed: flight medicine, behavioral health, flight medicine clinic, and the Astronaut Office. This theme recurred in a variety of venues during the committee's visit to JSC, and also extended to communication between these areas at JSC and Headquarters."*
- *"Several senior flight surgeons expressed their belief that their medical opinions regarding astronaut fitness for duty, flight safety and mission accomplishment were not valued by leadership other than to validate that all (medical) systems were "go" for on-time mission completion. Instances were described where major crew medical or behavioral problems were identified to astronaut leadership and the medical advice was disregarded. This disregard was described as "demoralizing" to the point where they said they are less likely to report concerns of performance decrement. Crew members raised concerns, regarding substandard astronaut task performance which were similarly disregarded."*

- *“Interviews with both flight surgeons and astronauts identified some episodes of heavy use of alcohol in the immediate preflight period, which has led to flight safety concerns. Alcohol is freely used in crew quarters. Two specific instances were described where astronauts had been so intoxicated prior to flight that flight surgeons and/or fellow astronauts raised concerns to local on-scene leadership regarding flight safety. However, the individuals were still permitted to fly. The medical certification of astronauts for flight duty is not structured to detect such episodes, nor is any medical surveillance program by itself likely to detect them or change the pattern of alcohol use.”*
- *“Astronaut medical and behavioral health care is highly fragmented...”*
- *“Psychological testing evaluation is conducted, and is intended to identify applicants who can adapt most readily and perform effectively in the extreme environment of spaceflight. However, this information is rarely and inconsistently used.”*
- *“There is no periodic psychological evaluation or testing conducted on astronauts. Once selected as an astronaut candidate, astronauts have no psychological evaluation for the remainder of their careers unless selected for long duration missions.”*

Risky Behaviors—*“Many anecdotes were related that involved risky behaviors by astronauts that were well known to the other astronauts and no apparent action was taken. Peers and staff fear ostracism if they identify their own or others’ problems.”* JSC officials described to staff several mechanisms that are in place for peers or staff to bring forward concerns about astronaut behavior, performance, or concerns about flight safety. Those mechanisms include anonymous safety reporting systems, approaching flight surgeons, the chief of the astronaut office, the crew commander, or other management. In addition, astronauts have access to the behavioral health clinic, the Employee Assistance Program, and to flight surgeons. However, Col. Bachmann indicated to staff that the external review heard instances of concerns about personal behavior that could be embarrassing and substandard performance during training and on-orbit, that

could potentially impact a mission but for which no actions were taken. He noted that human factors issues were a consistent theme of the interviews, but that his committee was not equipped to determine how widespread those issues were across NASA and that determining the extent of the problem should be an important task for agency management.

Barriers to Communication—*“Problems of communication were evident among the four areas addressed: flight medicine, behavioral health, flight medicine clinic, and the Astronaut Office. This theme recurred in a variety of venues during the committee’s visit to JSC, and also extended to communication between these areas at JSC and Headquarters.”* JSC

officials told staff that JSC is preparing an anonymous survey to explore the relationship between astronauts and flight surgeons and managers; to identify whether astronauts or flight surgeons have concerns in raising flight safety or crew suitability issues or whether barriers exist to doing so; and whether there are suggestions for changes to policies and procedures. A group from JSC Human Resources, including individuals with experience in survey design, is developing the survey and will analyze the results. The Flight Crew Operations Directorate and the Space Life Sciences Directorate, among others, are providing input on the questions to be included in the anonymous survey. (Staff has assembled a non-comprehensive list of the key NASA and JSC offices, and associated office responsibilities, involved in Astronaut Health Care and Safety that is provided as Attachment 2.) The Flight Crew Operations Directorate told staff that it will hold a Town Hall meeting with astronauts to discuss the results of the survey. JSC plans to issue the survey in mid-September. The results will be summarized in a report that will be delivered to the JSC Director. While supporting the idea of an anonymous survey, Col. Bachmann told staff that he thinks that it is very important that the questions be structured to avoid being overly narrow in focus; rather, the questions need to be open-ended to encourage anonymous comment, and the questions should be comprehensive enough to cover all of the issues raised in the report. In that regard, NASA might benefit from having its proposed survey reviewed by external survey experts.

Disregard of Flight Surgeon and Crew Opinions—*Several senior flight surgeons expressed their belief that their medical opinions regarding astronaut fitness for duty, flight safety and mission accomplishment were*

not valued by leadership other than to validate that all (medical) systems were “go” for on-time mission completion. Instances were described where major crew medical or behavioral problems were identified to astronaut leadership and the medical advice was disregarded. This disregard was described as “demoralizing” to the point where they said they are less likely to report concerns of performance decrement. Crew members raised concerns regarding substandard astronaut task performance which were similarly disregarded. JSC medical officials indicated that professional disagreements among flight surgeons and between flight surgeons and program officials could occur and were not suppressed. They described to staff several appeals mechanisms that flight surgeons can take should they choose to seek further consideration of a final medical decision that differs from the one they put forth. One official noted that he was unaware of cases where flight surgeons felt disregarded and was not aware of any cases in which a flight surgeon had made a medical decision that had been overruled by Shuttle or ISS program management. Col. Bachmann indicated that the interviewees themselves were the ones using the word “disregarded”, and that it was a theme that recurred in the interviews. Mention of “flight safety” and “mission impact concerns came directly from the interviewees. He also noted that the committee heard from individuals who chose not to take concerns to the next level of management due to the “demoralizing” effects of being disregarded.

Use of Alcohol in Preflight Period—*“Interviews with both flight surgeons and astronauts identified some episodes of heavy use of alcohol by astronauts in the immediate preflight period, which has led to flight safety concerns. Alcohol is freely used in crew quarters. Two specific instances were described where astronauts had been so intoxicated prior to flight that flight surgeons and/or fellow astronauts raised concerns to local on-scene leadership regarding flight safety. However, the individuals were still permitted to fly. The medical certification of astronauts for flight duty is not structured to detect such episodes, nor is any medical surveillance program by itself likely to detect them or change the pattern of alcohol use.”* As noted above, Col. Bachmann stressed that in its anonymous interviews the committee members did not use a prepared set of questions and did not ask about alcohol use. Instead the instances of alcohol use were offered up by the interviewees as examples of safety concerns they had witnessed. He later elaborated in the NASA press conference that one instance cited involved a T-38 aircraft and the other involved an ISS/Soyuz

launch opportunity. Further, during the NASA press conference that accompanied the public release of the external review report, Col. Bachmann stated that *“the two specific incidents of alcohol use that we put into the report were specifically chosen to illustrate a larger problem, to call attention to the larger issue which is the role of the flight surgeon in protecting both the individual’s health, flight safety, and mission completion, and the fact that the flight surgeons and other astronauts who described their role in these incidences and other which we did not obtain further details on were to say that they felt concerned that their professional input seemed to be disregarded, at least at the local level, and that they were demoralized by that disregard to the point that they felt like they would be less likely to report concerns or performance decrement in the future.”* Col. Bachmann indicated to staff that based on the information provided to the committee in the interviews, he considered the reports of alcohol use to be more credible than NASA’s characterization of them as simply “allegations”. NASA Safety and Mission Assurance chief Bryan O’Connor conducted an investigation of the reported instances of alcohol use and concluded that *“within the scope and limitations of this review, I was unable to verify any case where a spaceflight crewmember was impaired on launch day, or where there was a disregard by managers of a flight surgeon or co-crewmember recommendation that a crew member not fly Shuttle or Soyuz.”*

B. NASA Response to Recommendations of External Review

According to a NASA “Fact Sheet on the Findings of the Astronaut Health Care System Review Committee,” that accompanied public release of the review committee report on July 27, 2007, NASA reported the following steps to respond to the committee’s recommendations:

- *“Look for ways to enhance use of behavioral health data in the astronaut selection process*
- *Take steps to ensure that flight surgeons, trainers, and astronauts are free to communicate concerns of flight safety to senior leadership and encourage such communication*
- *Adopt a formal code of conduct for the astronaut corps*
- *Provide regular training to flight surgeons regarding behavioral health assessments*

- *Promote better communication from flight surgeons to all astronauts on their personal status with regard to medical qualification for space flight assignments*
- *Work to enhance a program of external peer review of NASA's medical and behavioral health staff*
- *Establish one credentialing and privileging authority for both the flight medicine and behavioral health providers, with documented processes for accountability*
- *Institute behavioral health assessments in conjunction with annual astronaut flight physicals*

During the press conference held on July 27, 2007, Ms. Shana Dale, NASA Deputy Administrator, stated that:

“NASA's existing T-38 Aircraft Alcohol Use policy that has historically been applied to space flight has been explicitly extended as an interim policy to flight on any space craft. This interim policy prohibits alcohol use for 12 hours prior to flight and further states that astronauts will neither be under the influence nor the effects of alcohol at the time of launch. A comprehensive review of alcohol use policy prior to aircraft use or space flight is already underway.”

In addition, on July 26, 2007, the Deputy Administrator of NASA, requested an internal review of *“reported allegations of heavy use of alcohol by astronauts in the immediate pre-(space) flight period.”* These incidences were identified in the report of the Astronaut Health Care System Review Committee. A summary of the selected issues, findings, and recommendations of the *Space Flight Safety Review* is provided below. NASA has indicated to staff that additional responses to the report and a recommendations implementation plan will be forthcoming later in the year.

Space Flight Safety Review

The safety review was conducted by the Chief of the Safety and Mission Assurance, Mr. Bryan O'Connor. According to the final report, which was released to the public on August 29, 2007, the scope of the review *“focuses on the space flight safety implications of alcohol use or abuse...those things that could cause impairment during launch day flight preparation.”* The after effects of alcohol use, such as hangover, were included in the scope of the review. *“The relevant question...was, ‘Did we have a situation where a*

crewmember presented on launch morning in an impaired state, was observed as such by flight surgeon or another crewmember, and was then cleared to fly by operational management over the objections of the flight surgeon (or other crewmember)?' Aircraft flying operations in general were out of scope."

According to the written report, the safety review involved inspection of crew quarters facilities at JSC and the Kennedy Space Center and a review of policies and procedures before launch. Records of JSC and space shuttle program hotlines, the NASA Safety Reporting System (NSRS), and NASA's close call and mishap reporting systems for "*astronaut alcohol abuse and space or aircraft flight*" were also examined. The review examined this data over the past 20 years. In addition, the review encompassed voluntary interviews, held on a **non-confidential** basis, with astronauts, flight surgeons, research and operations support nurses, shuttle-suit technicians, close-out-crew technicians, and the managers and staff of flight crew quarters.

Selected Findings and Recommendations

- Finding: "*Alcohol is available for crew use, and although it is possible to abuse it during limited private times, the culture of professionalism in today's astronaut corps, along with the highly visible, structured and supervised schedule during the last several days prior to launch provide reasonable controls to avoid flying an alcohol-impaired crewmember.*"
- Finding: "*In light of all the other controls in place on launch day, the L-0 flight surgeon check provides a reasonable likelihood of identifying signs of illness or impairment of the level that would threaten flight safety, but it could be supplemented by closer first hand observation prior to crew departure for the pad.*"
 - Recommendation: "*A flight surgeon should be located in the suit room during suit up to allow more direct contact with the crewmembers on launch day and reduce the reliance on a suit tech (non-clinician) picking up any last minute medical issue.*"

The report includes reference to the T-38 policy on alcohol use per Aircraft Operations and Training Procedures: T-38 Operating Procedures, Volume 1. JSC Aircraft Operations Division, 2005:

“5.4.3 Alcohol A crew member is not qualified for flight (takeoff) within 12 hours of consuming alcoholic beverages. NASA aircrews are expected to conduct themselves in a common sense manner. Excessive drinking even prior to 12 hours, enough to cause a hangover, is outside the spirit of the regulations. The policy is that aircrews will neither be under the influence nor the effects of alcohol at the time of takeoff.”

As noted above, the NASA Deputy Administrator has stated that this policy has been expanded to include space flight. According to NASA medical personnel, the medical basis for applying the 12-hour rule to spaceflight operations has not yet been determined.

C. Johnson Space Center (JSC) Internal Review Findings

As noted earlier in this hearing charter, “In response to the actions of astronaut Lisa Nowak...NASA JSC conducted an internal review of records and of the workplace. There were two purposes for the internal review. First, NASA JSC looked to determine whether there were any indicators which could have prompted NASA to take actions that could have averted the sequence of events. In addition, astronaut selection and retention procedures were reviewed to see if there were any lessons learned that could be incorporated into the improved practice of behavioral medicine.”

The assessment considered 1) existing psychological screening for admittance into the astronaut corps and the nature of any ongoing psychological evaluations during an astronaut’s career, 2) any indicators, including interactions with Lisa Nowak and other astronauts or NASA employees that may have raised concerns, and 3) recommended changes to practices or procedures and lessons learned for the future.

The review included the following recommendations:

- *“Conduct a 30-minute Behavioral Medicine assessment in conjunction with annual medical flight physicals.*

- *Perform Behavioral Medicine flight assessments for Shuttle crewmembers.*
- *Enhance aeronautical adaptability ratings (an assessment of fitness for flying duties) in astronaut medical selections.”*

D. Activities of Other Oversight and Advisory Bodies

The Aerospace Safety Advisory Panel (ASAP) has not issued a position on either the internal or external report.

According a letter dated August 24, 2007 sent from the NASA Inspector General to the NASA Administrator, *“In September 2007, we plan to initiate a review of NASA’s actions taken in response to reports of astronauts’ preflight use of alcohol.... Our review will evaluate the report of the Astronaut Health Care System Review Committee and the SMA [Safety and Mission Assurance] review, including their respective objectives and methodologies and determine whether additional work by our office is warranted.”*

ATTACHMENT 1

External Review Committee Members

Chair – Richard E. Bachmann, Jr., Colonel, USAF, MC, CFS, Commander, USAF School of Aerospace Medicine, specialist in aerospace medicine

Timothy W. Sowin, Colonel, USAF, MC, SFS, Chief, Aviation Neuropsychiatry Branch, USAF School of Aerospace Medicine, specialist in psychiatry and aerospace medicine

James P. Bagian, Colonel, USAFR. MC, SFS, Chief Patient Safety Officer, Department of Veterans Affairs, specialist in aerospace medicine and former NASA astronaut-physician

Mark S. Bauer, Professor of Psychiatry, Brown University & Providence Veterans Affairs Medical Center

James R. Fraser, Captain, MC, USN (ret), Deputy Federal Air Surgeon, specialist in aerospace medicine

Sandra A. Yerkes, Captain, MC, USN (ret), Director, NAVMED Medical Accessions, psychiatrist

Elizabeth K. Holmes, Captain, MSC, USN (ret), Stockdale Center for Ethical Leadership, clinical psychologist

Paul M. DeLaney, Captain, JAGC, USN, Chief of Staff, Office of the Judge Advocate General, Dept of the Navy, medico-legal advisor

Ex officio members:

James M. Duncan, NASA Chief of Space Medicine Operations at JSC

Wayne R. Frazier, NASA Office of Safety and Mission Assurance

Consultant:

Ellen S. Baker, current NASA astronaut physician

Executive Secretary:

John R. Allen, NASA Program Executive, Crew Health and Safety

ATTACHMENT 2

Selected List of NASA Offices Involved In Astronaut Health Care and Safety

NASA Headquarters		
Office of the NASA Administrator	Oversees all agency offices, activities, and employees	
Office of Safety and Mission Assurance	Responsible for agency safety and mission assurance	Reports to the Administrator
Office of the Chief Health and Medical Officer	<i>“Responsible for the oversight of all medical aspects of all national and international NASA missions involving humans,”</i> according to Dr. Williams’ biography.	Reports to the Administrator
Medical Policy Board	<i>“Responsible for health and medical policy and oversight of medical activities”</i> according to a NASA charter document NC 1000-12, effective July 25, 2007	Chaired by the Chief Health and Medical Officer or designee
Johnson Space Center		
Office of Johnson Space Center Director	Oversees all employees and activities at Johnson Space Center	Reports to the Administrator
Flight Crew Operations	<i>“Responsible for overall planning, direction, and management of flight crew operations and JSC aircraft program activities,”</i> according to JSC’s website.	Reports to the Center Director
Space Life Sciences Directorate	Responsible for activities including the Human Research Program, Space Medicine Division, Habitability and Environmental Factors Division, and Human Adaptation and	Reports to the Center Director

Space Medicine Division	Countermeasures Oversees medical activities including those of the Flight Medicine Clinic, Occupational Health Clinic, Behavioral Health Unit, and Medical Operations Group	Reports to the Director of Space Life Sciences
Aerospace Medicine Board	<i>“a clinical and implementing body for addressing crew medical qualifications,”</i> according to NASA document NC 1000-12.	Chaired by a senior JSC non-astronaut physician
JSC Safety and Mission Assurance	Safety and Mission Assurance at JSC	Reports to the Center Director